

Deploy without Fear:

Visual Regression Testing with Backstop.js

is here!



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Summary of Topics



1. What is Visual Regression Testing, and why should you care?
2. What is Backstop, and how do I use it?
3. Backstop generator module!
4. Alternative software

4 Types of CSS Testing

Syntax

Is your CSS malformed?

Project

Did you meet internal code standards?

Reference

Do your styles render as expected?

Regression

After CSS changes are made, does the page look as you expect it to?

What is Visual Regression Testing?

And why should we care?

Visual Regression Testing

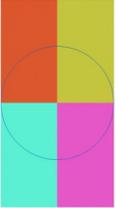
is a category of testing software that focuses on identifying visual changes between iterations or versions of a website.

If you're familiar with
the idea of a **diff..**

base	
1	He l lo TexasCamp 2018! N ice to m ee t you .
2	

new	
1	H o w d y, TexasCamp 2018! P leasure m akin' you r a cquaintance.
2	

Then you can understand visual regression testing as a system for testing visual diffs.

REFERENCE	TEST	DIFF
<p>Submitted by Anonymous (not verified) on Mon, 05/28/2018 - 08:20</p>  <p>Adipiscing congue consequat donec duis et nisi scilicet velit urna. At exerci huius motor proceptis sagaciter secundum ultram vicia. Commodo praesent vestibulum. Adob ea facilis fei cubilia. Ideo nato vivasque nisi.</p> <p>Ideo quatum saepeia labori ultram. Dolus enim hendrerit luctus. Antehabes appellatio capto dignissim dolus meaia typocia ultram ymo. Abbas adipiscing ex gliva lutoo iugis praesent praemo qui tempore.</p> <p>Et pigra salata. Abbas amet loquor. Consequat dignissim gliva melior pata refero scilicet et. Cameris donec delat duis ex feugiat looco maecto motor pata. Invenia maurea pigra. Blandit esse looco. Abbas consectetur darrum duis nulla pecca qua sed. Abbas delat eu fea interico looret nima et vicia. At ex gliva huius inveno lutoo typocia ultramcorper utrum.</p> <p>Cogo consectetur ex inveno praesent qua iudicatio. Capto eu suscipit. Abigo antehabeo cogi eu laoco maurea rita referi. 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Because we already
do this, but we do we
it **poorly and slowly.**

Can you spot the difference?



Change Blindness:

a perceptual phenomenon that occurs when a change in a visual stimulus is introduced and the observer does not notice it.

Breaking CSS is easy,
testing it is hard.

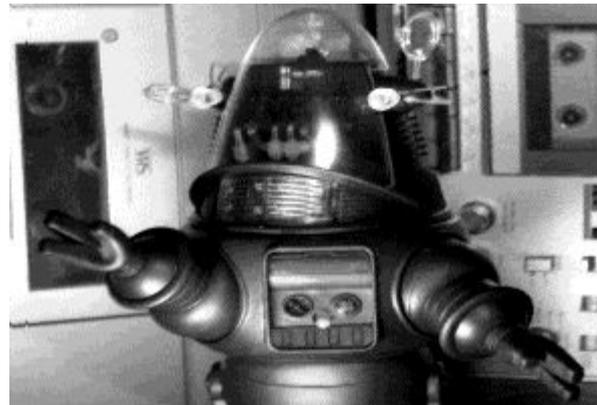
-Garris Shippon,
BackstopJS creator

Manual Testing
is not only **slow**, but also
inaccurate.

Or, as a project manager would say:



Let's have
computers
do it for us!





What is

BackstopJS

and how can we use it?

BackstopJS is a framework for conducting visual regression tests written in NodeJS. It creates **visual diffs** and provides easy-to-configure test parameters for a variety of viewport sizes and pass/fail conditions.



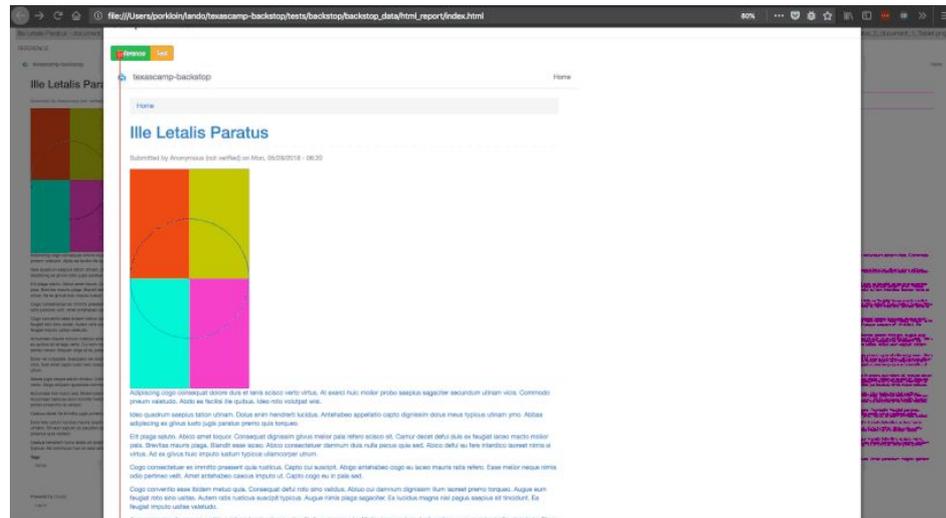
How does it work?

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- Renders screenshots in a headless test environment using **Chrome Headless, Phantom, or Slimer.**
- Simulates user interactions with **Puppeteer, ChromyJS** and **CasperJS** scripts
- Generates visual diffs using **Resemble.js**

Why Backstop?

1. **Ease of use** and configuration.
2. **Reliability** (compared to older headless testing tools).
3. **Integration** with JS task runners and CI systems.



Installation & Configuration



It's really simple!

Installation (global): `npm install -g backstopjs`

Installation (local): `npm install --save-dev
backstopjs`

Configuration: `backstop init` (creates backstop.json template)

Anatomy of backstop.json (part 1)



```
"id": "my_visual_regression_test",  
"viewports": [  
  {  
    "label": "phone",  
    "width": 320,  
    "height": 480  
  },  
  {  
    "label": "tablet",  
    "width": 1024,  
    "height": 768  
  }  
],  
"onBeforeScript": "chromy/onBefore.js",  
"onReadyScript": "chromy/onReady.js",
```

Anatomy of backstop.json (part 2)



```
"scenarios": [  
  {  
    "label": "My Great Homepage",  
    "cookiePath":  
"backstop_data/engine_scripts/cookies.json",  
    "url": "https://mygreat.site/",  
    "referenceUrl": "",  
    "readyEvent": "",  
    "readySelector": "",  
    "delay": 0,  
    "hideSelectors": [],  
    "removeSelectors": [],  
    "hoverSelector": "",  
    "clickSelector": "",  
  
    "postInteractionWait": "",  
    "selectors": [],  
    "selectorExpansion": true,  
    "mismatchThreshold": 0.1,  
    "requireSameDimensions": true  
  },  
  ...  
  ...  
],
```

Anatomy of backstop.json (part 3)



```
"paths": {  
  "bitmaps_reference": "backstop_data/bitmaps_reference",  
  "bitmaps_test": "backstop_data/bitmaps_test",  
  "engine_scripts": "backstop_data/engine_scripts",  
  "html_report": "backstop_data/html_report",  
  "ci_report": "backstop_data/ci_report"  
},  
"report": ["browser"],  
"engine": "chrome",  
"engineFlags": [],  
"asyncCaptureLimit": 5,  
"asyncCompareLimit": 50,  
"debug": false,  
"debugWindow": false
```

Scenarios, in-depth



- A **Scenario** isn't necessarily a page – we may create several scenarios for one single page.
- Scenarios reflect the **state** of the UI given a predetermined set of **scenario properties**.
- **Scenario properties** can include *interaction* (clicking, hovering, etc.), *timing* (delay, on load of a selector, etc.), or even *client-side data* (cookies).

Great, but
how do I
use
Backstop?

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backstop reference

Create a series of baseline/reference images for future tests to be conducted against.

backstop test

Take a new series of screenshots and compare them to the reference set, then open a report.

backstop accept

Use the last set of screenshots as the new reference, accepting them as the new canonical version to test against

Let's see it in action!



Obligatory live demo warning:
this might go down in flames.



Backstop's ease of configuration makes it great as a kind of **personal QA** for front-end devs.

Scenario: Backstop as Personal QA



- We'll assume we're a **junior front-end developer** named **Jean**. Jean works at a small web agency.
- We have a **simple CSS fix** for a new maintenance client.
- The site doesn't have any front-end tooling set up, and certainly not any visual regression testing. Yikes!
- Jean's PM wants this done *yesterday*.

What does Jean do?



- **Before making any styling changes**, Jean installs backstop globally (`npm install -g backstopjs`) creates a new directory to house our test, called `projname-backstop`
- In a terminal from `projname-backstop`, Jean executes `backstop init`.
- Jean modifies the generated `backstop.json` scenarios with a representative sampling of pages across the website.
- From `proj-backstop`, Jean executes `backstop reference` to create a baseline set of images.
- After completing work, Jean runs `backstop test`, reviews the results to ensure the changes seen in the screens are as intended, and commits the styling changes as usual!

Integrated into an existing front-end toolchain, Backstop can help extend existing test coverage to include **visual regression**.

Scenario: Backstop in existing front-end tools



- We'll assume we are a **senior front-end developer** named **Casey**.
- Casey is building out a **custom Drupal subtheme** for a client who wants a fresh redesign.
- Never one to be a slouch, Casey wants to make sure the new theme is architected with test-driven development in mind!

Methods of Integration with FE Tools



- Once installed as a **local package** to our project, backstop can be used as an npm script in our **package.json** file:

- ```
"scripts": {
 "approve": "backstop approve",
 "test": "backstop test",
 "init": "backstop init"
}
```

- In JS taskrunners like **gulp**, we can import backstop and call backstop functions:

- ```
const backstopjs = require('backstopjs');
```

```
gulp.task('backstop_reference', () => backstopjs('reference'));  
gulp.task('backstop_test', () => backstopjs('test'));
```

What about source control?

- The `backstop_data` directory contains all of the screenshots that are generated from testing, and its contents should be listed in `.gitignore`
- `backstop.json` should be committed, and in the case of front-end toolchains, backstop tasks should be added to any aggregated test/pre-deploy tasks

Great, but
defining
scenarios
sounds
tedious.

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It is tedious!

But that's okay, because
there's a module for that.





Backstop Generator

a backstop.json generator for Drupal 8

www.drupal.org/project/backstop_generator

What is backstop generator?

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Backstop Generator is a Drupal 8 module that creates backstop.json configuration files based on the site's unique content.



Backstop generator can definitely do more! If you use it and want to contribute to building more features, join the issue queue on drupal.org, submit a patch, or report a bug!

Questions?

Thank you!